**COMMONWEALTH OF MASSACHUSETTS**
**DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY**

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| **Investigation by the Department of Telecommunications and Energy on Its own motion into Distributed Generation** | ) | **D.T.E. 02-38-C** |

**COMMENTS AND PETITION OF THE**
**MASSACHUSETTS DIVISION OF ENERGY RESOURCES**

## I. Introduction

On June 30, 2006, the Distributed Generation ("DG") Collaborative submitted its 2006 Final Report in which it proposed further revisions to the Model Interconnection Tariff previously approved in this docket, and made specific recommendations to address challenges to DG in Massachusetts ("2006 Report"). The Department of Telecommunications and Energy ("Department") issued a Request for Comments by September 7, 2006. The Massachusetts Division of Energy Resources ("DOER") hereby submits the following comments on the 2006 Report. Further, as discussed in more detail below, DOER petitions the Department to continue its investigation in this or a new docket in order to examine the economic barriers to the development of DG caused by standby rates.

In announcing his energy plan for Massachusetts, Governor Romney stated on August 10, 2006 in *Massachusetts' Energy Future: A Balanced Approach* ("Next-Gen"), that DG should play an increased role in addressing the Commonwealth's energy needs. In order to increase that role, he has identified a lowering of standby rates as a way to encourage the installation of efficient, on-site generation. In this docket, the Department clearly recognized existing barriers to the successful implementation of DG, and the DG Collaborative has gone a long way in identifying ways to overcome these barriers. However, DOER believes that DG has further potential for adding significant and measurable benefits. Removal of the remaining impediments to the development of DG in Massachusetts will ensure that we as a state maximize the potential of all resources necessary to reliably meet our growing energy demands and avoid the high cost of new capacity.

The conclusions of the 2006 Report provide an appropriate segue for the Department to delve deeper into the effect of standby rates as an economic barrier to the successful implementation of Distributed Generation. Therefore, DOER respectfully requests the Department to either establish a new phase of this docket or open a new generic investigation, pursuant to its authority under G.L. c. 164, § 76, to determine an appropriate methodology for the calculation of standby or back-up rates for interconnecting DG facilities.

## II. Procedural Background

On June 13, 2002 the Department issued an *Order Opening an Investigation into Distributed Generation* ("NOI"). DTE 02-38 (2002). The Department focused the scope of the proceeding in terms of the following three specific issues:

- The development of interconnection standards and practices;
- The appropriate method for the calculation of standby or back-up rates and other relevant charges associated with the installation of DG;
- The role of DG in distribution company resource planning.

After receiving two rounds of comments, the Department issued an *Order Establishing a Distributed Generation Collaborative Forum*.[1] DTE-02-38-A (2002). In 2003, the newly created DG Collaborative filed its *Proposed Uniform Standards for Interconnecting Distributed Generation in Massachusetts* and then it's *Tariff to Accompany Proposed Uniform Standards for Interconnecting Distributed Generation in Massachusetts* (the "Model Interconnection Tariff").

In 2004, the Department issued an *Order on Model Distributed Generation Interconnection Standards and Procedures Tariff*, in which it approved, with some modifications, the Model Interconnection Tariff. D.T.E. 02-38-B (2004). With that Order, the Department authorized a two-year continuation of the DG Collaborative, to allow the DG Collaborative to refine the

[1] The Order highlighted that "a number of commenters stated that a collaborative initiative was not likely to be effective with respect to: (1) distribution company standby service tariffs." DTE 02-38-A, at 3.

Model Interconnection Tariff and, among other things,[2] to discuss the role of DG in distribution company planning. Id., at 35, 41.

In its 2005 Annual Report, the DG Collaborative summarized a number of areas of agreement and identified issues for further review. The DG Collaborative had tracked and analyzed interconnection data and implemented changes to facilitate the interconnection process. The DG Collaborative had also identified a number of technical engineering and operational challenges in connecting to spot and area networks and it worked on identifying potential solutions to these challenges. The 2005 Report identified continuing tasks for 2006, including tracking new interconnections to assess costs and time frames; assessing potential solutions to the technical and operational challenges in connecting to spot and area networks; analyzing eight identified distribution planning opportunities; and creating 2-4 pilot projects and assessing this data.

The Department then issued another *Order on Model Distributed Generation Interconnection Standards and Procedures Tariff*, in which it approved the recommendations of the DG Collaborative for modifications to the Model Interconnection Tariff and the identified tasks for 2006. DTE 02-38-C (2005). On June 30, 2006, the DG Collaborative submitted its 2006 Final Report. DOER fully endorses the 2006 Final Report and the many accomplishments of the DG Collaborative over the past year.

## III. The DG Collaborative 2006 Final Report

The 2006 Report is of primary importance for proposing improvements to the Model Interconnection Tariff and developing an appropriate set of policies for DG in the Commonwealth. In Section 2, the Report recommends minor improvements to the Model Interconnection Tariff, which are further discussed below. In Section 3, the Report includes an analysis of various aspects of the interconnection process, including (a) insurance and indemnification issues, (b) network interconnection, (c) Federal and regional standards for interconnection, and (d) two years of data on customers seeking interconnection. In Section 4, the analysis of the potential role for DG in distribution planning and recommendations for other

[2] The Department also asked the DG Collaborative to address interconnection to networks and meter ownership.

next steps include (a) a report of the findings of the Distribution Planning Working Group, (b) a policy statement for potential future work, (c) a description of numerous relevant DG activities conducted outside the Collaborative, and (d) a proposal for a set of workshops to continue analyzing the potential role for DG in distribution planning. Finally, the Report identifies potential future activities, including a proposal to dissolve the current DG Collaborative and create a regional DG initiative.

DOER would like to highlight the importance of the various tariff changes recommended by the 2006 Report. While the changes to the tariff might appear to be relatively minor and few, it is important to note that the changes are significant in light of the fact that there has been minimal feedback from customers in applying the tariff. The most notable improvements to the tariff include (a) a mechanism for DG providers and public agencies to procure private insurance, (b) exemption from liability insurance for efficient facilities under 60 kilowatts (kW), (c) increased eligibility for the simplified process, e.g., the 10 kW cap is changed to 25 kW in certain common applications, (d) a requirement for utilities to complete system modifications on a timely basis, and (e) an option for customers to submit multiple potential scenarios for interconnection, in order to avoid new applications for project revisions. Each of these recommendations serves as a fine example of how the DG Collaborative applied itself to resolve real barriers experienced by individual customers.

## IV. DOER Requests the Department to Further Investigate Standby Rates

In 2002, the Department clearly identified standby or backup rates as a potential hurdle for DG: "Back-up rates that are too high may inappropriately discourage the development of distributed generation." NOI, at 4. Therefore, the Department included the issue of standby rates as one of the three areas to be investigated in this docket. However, the nature of the DG Collaborative between all stakeholders made it difficult for the participants to constructively discuss or reach agreement on such a controversial issue. While distribution companies would benefit from high standby rates, developers would prefer low (or no) standby rates. Thus, this controversial issue was explicitly excluded from the list of issues which the Department assigned to the DG Collaborative.

The DG Collaborative was successful in addressing the categories of technical and process aspects of interconnection, and providing a review of the potential role for DG in distribution planning.[3] While this collaborative process enhanced the ability of the Department to conduct its investigation into these DG issues, it is now appropriate for the Department to conduct a generic investigation into the unresolved issue of standby rates as a hurdle to the successful implementation of DG.

### *A. Benefits from DG are Highlighted by the 2006 Report*

While the DG Collaborative agreed with the Department's request not to address rates, the 2006 Report provides significant evidence of the need to fully address rates. First, the Collaborative members agreed to describe specific benefits that can result from DG. For instance, the 2006 Report highlights the impact of DG on constrained areas, market prices, and the environment, and describes economic benefits that can result. 2006 Report, at 38. Second, through the work of the Distribution Planning Working Group the members agreed on the inclusion of numerous benefits when establishing the value of installing DG in constrained areas where utilities might be capable of deferring distribution line upgrades. 2006 Report at 35; Attachments G and H.

Furthermore, Attachment G to the 2006 Report contains an economic analysis of DG and Distribution Planning. In order to look at the holistic impact of a hypothetical program on all stakeholders, all known benefits and costs of DG were included in that analysis. The DG Collaborative agreed to all of the items, but could not reach consensus on how each item should be quantified. While this analysis provides a useful starting point, it highlights the need for the Department to conduct a more thorough investigation of the economic barriers to DG.

### *B. DG Is an Important Component of Meeting the Commonwealth's Future Energy Demands.*

[3] The 2006 Report lists only two activities that call for specific action from the Department. The list of Next Steps (p. 46) includes Item 3, to clarify DTE and FERC jurisdiction over interconnection, and Item 9, to consider utility ownership of DG; all other items are activities undertaken voluntarily by select participants, without direction from the DTE.

In his recent Plan, Governor Romney stated that the current energy infrastructure will not meet the Commonwealth's future needs. In addressing these future needs, Governor Romney recommends a balanced approach which would (1) reduce consumption, (2) increase and diversify supply through renewable energy, (3) fix our infrastructure problems, and (4) promote an advanced energy technology sector. To address our infrastructure problems, the Plan states that it is essential to encourage on-site generation and reduce standby rates in order to drive private investment.

### *C. Standby Rates Are A Barrier to Full Development of DG Potential*

Two years of tracking data on applications for interconnection[4] provide clear evidence that standby rates pose a barrier to large installations that would otherwise have brought the benefits of DG to a strained infrastructure. For example, Table 1 (see Appendix) demonstrates that since the NSTAR standby rate was set in 2004, there has been a significant drop-off of proposed new DG projects, particularly above 250 kW. It is important to note that the NSTAR standby rate applies to all non-renewable DG units above 250 kW. Units that fall into this category are most likely utilizing combined heat and power (CHP) technology, the type of DG that poses the greatest potential to contribute to the state's capacity needs in an efficient and clean manner. The data in Table 1 suggests that the standby rates have discouraged such units. This decrease in interconnection requests is in stark contrast to the trend seen elsewhere in the Commonwealth. Table 2 compares interconnection requests in the NSTAR territory to National Grid, which has a service territory of comparable size but no standby rate. Note that there were no units above 250 kW added in NSTAR territory since the installation of the standby rate, but 7 such units were added in National Grid territory where no standby rate currently applies.

This trend is particularly troubling given the research supervised by the Northeast Combined Heat and Power Application Center at UMASS which demonstrates the significant potential for combined heat and power ("CHP") in the Commonwealth. In analyzing the impact of the new

[4] The complete data is available at the following MTC website address: <http://www.masstech.org/renewableenergy/public_policy/DG/resources/Collab_Collab2005_TrackingdataonDGinterconnection.htm>

standby rate, the study concluded that CHP installations were no longer cost effective above 250 kW in the NSTAR territory.  Table 3 shows sites in Massachusetts with the potential for installing CHP >250kW.  This data shows that approximately 9,344 customers have the potential to use CHP technology, and those facility types, on average, have a need for a system larger than 250 kW.

DOER estimates that if all the potential DG customers in the NSTAR territory installed CHP it could amount to as much as 1,838 MW of capacity.   Since not all customers who can install CHP will choose to do so, it is difficult to determine what the outcome would have been without the rate.  However, the data appears to show that market penetration of CHP for certain customer classes has been severely stifled as a result of standby rates.

### *D. DG Expansion at Moderate Levels Has Minimal Rate Impacts*

Past considerations of standby rates have raised concerns before the Department about potential cross-subsidization between and among customer classes should the standby rate level be set too low to fully recover the costs of providing this service.  See D.T.E. 03-121, Order (July 23, 2004), at page 46.  This issue was not fully adjudicated, however, in the NSTAR case and the settling parties did not concede that such cross-subsidization would occur when the benefits of DG are fully reflected in the calculation of such rates. More importantly, a simple analysis of the potential for cost shifting indicates that even if it did occur, the impact would not be significant and more than offset by the benefits of the added generation on the system. Table 4 demonstrates the potential rate impacts of DG on local distribution company customers, assuming that there was no standby rate and that revenue losses to the company would be collected from other customers.  For simplification purposes, DOER assumed 30 MW of new DG in each of the Boston Edison and National Grid service territories.[5]  Assuming a capacity factor of 70% and using current distribution and transition charge rates, DOER calculated a revenue loss figure for each utility.  Finally, these revenue loss estimates were allocated to other customers based on their MW load and number of customers.

[5] This level of new DG is consistent with the amount of new DG added during 2005 throughout the Commonwealth.

As shown in Table 4, bill impacts are relatively minor for each customer class, taking into account the average size for each class. It is important to note that these results represent a worst case scenario—the analysis did not adjust for system benefits, such as avoided capacity and distribution costs.

## V. Conclusion

By opening these proceedings in 2002, the Department recognized the important benefits to be gained by encouraging the development and deployment of DG. The 2006 Report and Revised Model Interconnection Tariff provide a significant step toward that goal. As this process reaches its conclusion and the DG Collaborative dissolves, DOER will continue to forge progress on DG policy through its work on the EPRI/STAC Workshops, network interconnections, distribution system planning, potential standby rate filings, the ISO-NE Forward Capacity Market, and the promotion of renewables and CHP.

However, the Department should further investigate a number of unresolved economic and policy issues in order to allow DG to play an integral role in addressing the Commonwealth's energy needs. Therefore, DOER respectfully requests the Department open a generic proceeding, pursuant to its authority under G.L. c. 164, § 76, to investigate standby rates and analyze the costs and benefits of DG to distribution companies.

Respectfully submitted,

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## APPENDIX

### TABLE 1: Natural Gas Installations and the NSTAR Standby Rate

NSTAR Installations Before the Effective Standby Rate (4/01/04 to 12/31/04)

| | Projects | Total kW | Average Size |
|---|---|---|---|
| <250 | 20 | 1975 | 99 |
| = 250 | 6 | 1500 | 250 |
| >250 | 7 | 7670 | 1096 |
| All NG Projects | 33 | 11145 | 338 |

NSTAR Installations After the Effective Standby Rate (1/1/05 to 3/31/06)

| | Projects | Total kW | Average Size |
|---|---|---|---|
| <250 | 7 | 379 | 54 |
| = 250 | 0 | 0 | 0 |
| >250 | 0 | 0 | 0 |
| All NG Projects | 7 | 379 | 54 |

### TABLE 2: Number of Natural Gas Installations in National Grid (Since 12/31/04)

| | Projects | Total kW | Average Size |
|---|---|---|---|
| <250 | 8 | 356 | 45 |
| = 250 | 0 | 0 | 0 |
| >250 | 2 | 4000 | 2000 |
| All NG Projects | 10 | 4356 | 436 |

**TABLE 3: Sites in MA with the Potential for Installing CHP > 250 kW**

| Facility Type | # of Sites | Total Capacity (MW) | Average System Size (kW) |
|---|---|---|---|
| Office buildings | 5,652 | 1,455 | 257 |
| Fabricated metal products | 760 | 215 | 283 |
| Primary metals | 76 | 23 | 302 |
| Machinery | 119 | 36 | 305 |
| Grocery stores | 843 | 309 | 366 |
| Hotels & motels | 380 | 143 | 376 |
| Food | 330 | 131 | 396 |
| Electrical equipment, appliances & components | 63 | 25 | 402 |
| Museums | 62 | 26 | 416 |
| Computer & electronic products | 246 | 106 | 430 |
| Chemicals | 135 | 78 | 575 |
| Transportation equipment | 22 | 13 | 585 |
| Textiles | 91 | 55 | 601 |
| Correctional institutions | 36 | 27 | 742 |
| Water & sewage treatment plants | 147 | 128 | 867 |
| Paper | 162 | 162 | 1,000 |
| Hospitals | 121 | 301 | 2,486 |
| Colleges & universities | 99 | 444 | 4,485 |
| **TOTAL** | **9,344** | **3,677** | **14,874** |

Sources: "Technical Analysis of the Potential for Combined Heat and Power in Massachusetts," Lauren R. Mattison, Master's Thesis, UMASS Amherst, Dept. of Mechanical and Industrial Engineering (May 2006); DOER.

**Table 4: Illustrative Rate Impact Analysis of DG Lost Revenue**

| | Boston Edison | National Grid |
|---|---|---|
| **MWs** | **30** | **30** |
| **Total Annual Lost Revenue** | **$ 5,747,629** | **$ 3,324,121** |
| Small C&I Allocation | $148,102 | $402,828 |
| Medium C&I Allocation | $768,463 | $443,521 |
| Large C&I Allocation | $3,866,795 | $1,095,875 |
| Residential Allocation | $964,268 | $1,381,898 |
| **Monthly Bill Impacts** | | |
| **Small C&I** | $0.19 | $0.25 |
| **Medium C&I** | $2.32 | $3.10 |
| **Large C&I** | $112.43 | $30.19 |
| **Residential** | $0.14 | $0.11 |

Note: Lost revenues were calculated using G-3 rates for each company as follows:

The 30 MWs for each distribution company was multiplied by 8760 hours per year and then multiplied by a 70% capacity factor to calculate 183,960 megawatt hours per year generated by the DG units in each service territory. The 30 MWs was multiplied by 1000 to calculate kilowatts and then multiplied by ($8.94 + $2.51)/kW, which are the monthly distribution and transition charges, per kW for NSTAR. Multiplying 30,000 * ($8.94+$2.51) * 12 months yields $4,120,800 (approximately). For the kWh charges, we used a weighted average (to account for the seasonal rate) transition charge per kWh of 0.884 cents. This value was multiplied by 1000 to arrive at a per MWh charge and then multiplied by 183,960 MWh per year to arrive at $1,626,829. Summing $4,120,800 and $1,626,829 yields the estimate of $5,747,629 indicated above for NSTAR.

The same calculation was performed for National Grid using kW charges of $3.75 and $0.90 for distribution and transition charges, respectively, and kWh charges of 1.171 and 0.324 cents for distribution and transition charges, respectively.

Source: DOER